

Application No. 10/775,077

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By way of this Amendment, previously filed independent claim 1 has been amended and claims 2-26 have been added. This Amendment is responsive to the first Office Action mailed on September 11, 2006.

In the Office Action mailed on September 11, 2006, the Examiner objected to the ABSTRACT of the disclosure because it exceeded the limit of 150 words. Correction has been made and Applicants respectfully request the withdrawal of this objection.

Claim 1 was rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Porter, U.S. Patent No. 5,713,912.

Claim 1 has been amended to more particularly clarify the language and distinguish over the Porter patent. The Porter patent fails to disclose or suggest each of the elements set forth not only in amended claim 1, but also in new claims 2-26.

Claims 1-3

Porter relates to a ligating clip for occluding a vessel and, more specifically; "a ligating clip which does not have the tendency to push vessels out of the clip as the clip is closed onto the vessels" (see for example column 2, lines 6-8, of the Porter patent).

With reference to figures 1 and 2, the ligating clip 10 according to Porter "includes a pair of legs 12, wherein each one of the legs 12 has a proximal end 14, a distal end 16, an inner surface 18" having a plurality of ramp members 38

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extending from inner surface 18 for contacting the ligated vessel (see column 2, lines 57-60, of the Porter patent). The proximal ends 14 of the legs 12 are joined to define a hinge 22, about which legs 12 are movable. In the open configuration of the Porter ligating clip 10, legs 12 do not define an uninterrupted tissue contacting surface when legs 12. Instead, as illustrated for example in figures 1 and 2 of the Porter patent, legs 12 of ligating clip 10 form an open L-shaped arrangement and define an interrupted tissue contacting surface or inner surface 18. In the open configuration, legs 12 are only coupled at their proximal end 14, and are not coupled at their free distal end 16.

Those skilled in the art will readily appreciate that the ligating clip 10 according to Porter needs to have an interrupted tissue contacting surface 18 in the open configuration of the ligating clip, to provide a space to allow insertion of the vessel 50 between legs 12 prior to ligating the vessel 50. Having a substantially uninterrupted tissue contact surface 18, 38 or a closed perimeter arrangement as illustrated in figures 6 and 7 of the Porter patent, would prevent, or at best make very difficult, the insertion of vessel 50, since in such a closed perimeter arrangement legs 12 would already be applying a clamping force on vessel 50, as illustrated by the distorted vessel 50 in Figures 6 and 7. Moreover, those skilled in the art would further appreciate that insertion of vessel 50 in between legs 12, when the legs are in a closed perimeter arrangement, can only be attempted if tubular vessel 50 is first cut transversely to produce a free terminal end. The insertion of the resulting free end of vessel 50 may then be attempted through the closed perimeter arrangement of legs 12 by inserting the

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vessel free end in a direction along the longitudinal axis of tubular vessel 50. This is contrary to the teachings of a ligating clip according to Porter, especially in the context of clamping off vessels of an animal being castrated, since cutting vessel 50 prior to ligating with clip 10 may result in uncontrolled bleeding through said vessel.

Porter fails to teach or suggest any structure of a hemostatic tissue clamp comprising first and second jaw members together defining a substantially uninterrupted tissue contacting surface when the jaws are in the open configuration. As set forth in Applicants' claim 1, in one embodiment Applicants' invention provides:

- said first and second jaw members together defining a substantially uninterrupted tissue contacting surface when said jaw members are in said open configuration, said tissue contacting surface configured and sized for exerting a hemostatic pressure and for substantially encompassing said inserted portion of said target tissue site when said jaw members are in said clamping configuration;

Porter also fails to teach or suggest any structure of a tissue clamp in which the tissue contacting surface of the clamp jaws are configured and sized for exerting a hemostatic pressure and for substantially encompassing an inserted portion of the target tissue site when the jaw members are in a clamping configuration.

Therefore, for at least these reasons, Applicants respectfully submit that claim 1, and claims 2-3 depending thereon, are patentable over the Porter patent and respectfully request notice of allowance regarding same.

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New Claims 4-26

Independent claim 4 has been added by way of this Amendment, along with claims 5-26 which depend directly or indirectly from claim 4. Claim 4, for example, recites a tissue clamp including:

- a first and a second jaw member, said first and second jaw members each having a first and second jaw ends, said first and second jaw members being coupled to each other at a first coupling member at respective said first jaw ends and simultaneously coupled to each other at a second coupling member at respective said second jaw ends, said second coupling member being spaced apart from said first coupling member;
- said first and second jaw members being movable between an open configuration and a clamping configuration, wherein when said jaw members are in said open configuration said jaw members are in a substantially spaced relationship relative to each other for allowing insertion of said target tissue therebetween, and wherein when said jaw members are in said clamping configuration said first and second jaw are in a substantially proximal relationship relative to each other for exerting a tissue clamping pressure substantially adjacent to said target tissue;
- said first and second jaw members together defining a substantially continuous jaw perimeter when said jaw members are in said open configuration, said jaw perimeter being configured and sized with a tissue contacting surface for exerting said tissue clamping pressure generally along said peripheral border so as to substantially encompass said target tissue from said non-target tissue when said jaw members are in said clamping configuration;

Unlike the Applicants' claimed invention, Porter fails to teach or suggest any structure of a tissue clamp having two jaw members simultaneously coupled to first and second coupling members and together the jaw members defining a substantially continuous jaw perimeter when they are in an open configuration.

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The continuous jaw perimeter being configured and sized with a tissue contacting surface for exerting a tissue clamping pressure generally along a peripheral boundary so as to substantially encompass the target from the non-target tissue when the jaws of the tissue clamp are in a clamping configuration.

As further set forth in new claim 5, unlike the Applicants' claimed invention, Porter does not recite a tissue clamp having first and second jaw members that are simultaneously coupled to each other at a first and a second coupling member, the tissue clamp providing relative pivotal movement between the first and second jaw members when the jaw members are actuated between the closed and open configurations, the pivotal movement occurring about a pivotal axis that is generally aligned through the first and second coupling members.

Therefore, for at least these reasons, Applicants respectfully submit that claim 4, and claims 5-26 depending thereon, are patentable over the Porter patent and respectfully request notice of allowance regarding same.

Advantages

The invention provides various advantages. For example, a tissue clamp, as claimed, configured with a continuous or uninterrupted jaw perimeter allows more uniform application of clamping pressure to be exerted along entire length of the tissue contacting surface of the tissue clamp jaw members. This minimizes or avoids the risk of tissue trauma in select areas along the jaw members where the clamping pressure may be excessive or concentrated, and

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minimizes or avoids the risk of inefficient clamping or hemostasis in other areas along the jaw members where clamping pressure may be inadequate or insufficient. In addition, the claimed invention allows a target tissue to be encompassed from a non-target tissue along a peripheral boundary when the tissue clamp, or more specifically the jaw members thereof, are in a clamping configuration. In one embodiment of the tissue clamp according to the Applicants' claimed invention, the tissue clamp may be configured and sized to allow selective hemostatic clamping of only a target tissue portion of an organ, such as a kidney, while the rest of kidney (i.e. the non-target tissue portion) is not clamped and continues to be perfused with blood during the removal of a cancerous tumour from the target tissue that is clamped and in hemostasis.

In addition, for a given jaw member material and cross-section area thereof, a tissue clamp having jaw members that together define a continuous jaw perimeter according to the claimed invention allows generally higher clamping pressures to be applied to target tissue being clamped, with relatively less distortion occurring along the jaw members from the resistance of the target tissue to the imposed clamping pressure. For example, a conventional tissue clamp having an interrupted jaw perimeter, resulting from two jaw members pivotally coupled at one end and uncoupled and free at an opposed end, would see the free ends of the jaw members deflecting more than the coupled ends of the jaw members when a high clamping load is required to clamp a body tissue. As such, inefficient clamping may result with such type of clamps, or injury to the body tissue closest to the pivotally coupled jaw ends may occur from excessive

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clamping pressures required to also ensure clamping at the terminal free ends of jaw members. In contrast, a tissue clamp having a continuous jaw perimeter allows more uniform load to be applied along the jaw members defining the continuous jaw perimeter, and avoids distortion or deflection of the jaw free terminal ends described above in reference to a conventional tissue clamp with interrupted or non-continuous jaw perimeter. One example of a tissue clamp advantageously exploiting the benefits of a continuous jaw perimeter is recited in the Applicants' specification in reference to a hemostatic clamp configured and sized for nephron-sparing surgery (see for example figure 1 and page 14, lines 14-24 of the Applicant's specification).

Other advantages of the Applicants' device is the ability to include an energy transmission means connected to the jaw members of the tissue clamp so as to allow an energy transfer between the target tissue and the tissue clamp, such as for example to allow a radiofrequency ablation of the target tissue.

Further advantages of the Applicants' device is the ability to include a cooling means adjacent the jaw members of the tissue clamp so as to allow cooling of at least a portion of the target tissue being clamped.

Conclusion

For at least the reasons stated above, Applicants respectfully submit that this Application is now in complete condition for allowance. If there is any further matter in need of being addressed in order to expedite allowance of this

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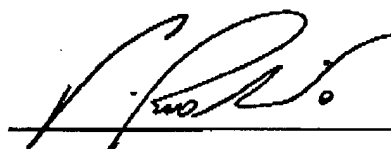
Application, the Examiner is invited to contact the Applicants' representative to resolve such issues.

REQUEST FOR CONSTRUCTIVE ASSISTANCE

The undersigned has made a diligent effort to respond to the Office Action. If for any reason the claims of this application are not believed to be in full condition for allowance, the Applicant respectfully requests the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims pursuant to MPEP 707.07(j) or in making constructive suggestions pursuant to MPEP 706.03(d) in order that this application may be placed in allowable condition as soon as possible, and without the need for further proceedings.

Dated: 11 MARCH 2007

Respectfully submitted,



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